Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-11 are pending in the application, with claims 1, 3 and 7 being the independent claims.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 112

The Examiner has rejected claim 2 under 35 U.S.C. § 112, first paragraph, because the recited features of "a plurality of DOCSIS networks" and "generating a plurality of data compression dictionaries, each of which is individually tuned for a corresponding one of the plurality of DOCSIS networks" are allegedly not supported by the specification of the instant application. For the reasons set forth below, Applicants respectfully traverse.

Paragraph [0055] of the specification states as follows:

> At step 505, the ASCII strings to be entered into the data compression dictionary are identified. In an embodiment, the CMTS analyzes the data strings being exchanged between it and the cable modems in the HFC network 110. The CMTS then selects the most frequently occurring data strings for entry into the data compression dictionary. *In this way, the data compression dictionary is tuned for the particular HFC network 110 in which the CMTS and cable modems are located.*

(emphasis added). Applicants respectfully submit that the highlighted text, which states that "the data compression dictionary is tuned for the *particular* HFC network 110 in which the CMTS and cable modems are located" clearly suggests that the described

technique could also be applied to *other* HFC networks. Because a person skilled in the art would immediately appreciate this upon reading the text, this text provides adequate written description support for the subject matter of claim 2. *See* M.P.E.P. § 2163.02 ("Whenever the [written description] issue arises, the fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed.")(citing *Vas-Cath v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991)).

Furthermore, the version of claim 2 that was included in the originally-filed application recited "the method of claim 1, *wherein the data compression dictionary is individually tuned for each one of a plurality of DOCSIS networks.*" Because this claim was part of the original application filing, it provides explicit written description support for the concept of "a plurality of DOCSIS networks" and the generation of a data compression dictionary that is individually tuned for each one of the plurality of DOCSIS networks.[1] Indeed, Applicants only amended claim 2 to more clearly recite the subject matter that was already included therein, not to add new matter.

In view of the foregoing, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 112, first paragraph, be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1, 3, 7 and 10

The Examiner has rejected claims 1, 3, 7 and 10 under 35 U.S.C. § 103(a) as

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[1] Original claims constitute their own written description. *See In re Benno*, 768 F.2d 1340, 1346 (Fed. Cir. 1985); *In re Anderson*, 471 F.2d 1237, 1238-39 (C.C.P.A. 1973).

being unpatentable over U.S. Patent Application Publication No. 2002/0029206

to Satoh *et al.* ("Satoh") in view of U.S. Patent No. 6,438,123 to Chapman ("Chapman").

For the reasons set forth below, Applicants respectfully traverse.

Independent claim 1 recites a method for generating a data compression

dictionary in a DOCSIS network. The method includes the steps of:

> i. identifying a plurality of frequently occurring data strings transmitted by a plurality of cable modems in the DOCSIS network;
>
> ii. assigning a token to represent each one of the plurality of frequently occurring data strings;
>
> iii. entering each one of the plurality of frequently occurring data strings and each token assigned to represent each one of the plurality of frequently occurring data strings into a lookup table to produce a data compression dictionary; and
>
> iv. transmitting the data compression dictionary to the plurality of cable modems in the DOCSIS network.

Satoh is directed to a system for data compression/decompression in which a

"compressing dictionary use or non-use deciding unit" is used to decide whether or not

data being stored or transmitted by a first computer to a second computer is compressed

using a data compression dictionary. The determination of whether or not compression

is applied is made based on the type of text being stored or transmitted. In Satoh, the

compression dictionary is created based on the contents of the data to be compressed.

See Satoh at paragraph [0186] ("In the dictionary, a predetermined code is assigned to

each character of a high probability of occurring in data to be compressed.").

In contrast to claim 1, Satoh nowhere teaches or suggests identifying a plurality

of frequently occurring data strings in *transmissions originating from a plurality of cable*

modems in a DOCSIS network to build a data compression dictionary. Rather, in Satoh,

only a single source—namely, the data to be compressed for storage or transmission—is

used to define the compression dictionary. Because the invention of claim 1 identifies a

plurality of frequently occurring data strings in transmissions originating from a plurality

of cable modems in the DOCSIS network, it is able to build a data compression

dictionary that is "tuned" for that network. As set forth in the specification of the present

application:

> At step 505, the ASCII strings to be entered into the data compression
> dictionary are identified. In an embodiment, the CMTS analyzes the data
> strings being exchanged between it and the cable modems in the HFC
> network 110. The CMTS then selects the most frequently occurring data
> strings for entry into the data compression dictionary. *In this way, the
> data compression dictionary is tuned for the particular HFC network 110
> in which the CMTS and cable modems are located.*

See Specification, paragraph [0055] (emphasis added). Since Satoh's compression

dictionary is generated based solely on the data that is to be compressed for storage or

transmission, it does not teach or suggest this aspect of independent claim 1.

In further accordance with claim 1, the data compression dictionary, once built, is

transmitted to the plurality of cable modems in the DOCSIS network. A benefit of this

step is that each cable modem can then use the data dictionary (which has been tuned for

the DOCSIS network) for compression purposes, thereby resulting in a reduction of

bandwidth utilization by each of the cable modems across the shared DOCSIS network.

In contrast, in Satoh, the only disclosed use of the data compression dictionary is for

storing the compressed data or for transmitting the compressed data from a first

computer to a second computer. Thus, Satoh nowhere teaches or suggests transmitting

the data compression dictionary to the plurality of cable modems in the DOCSIS network

as recited in claim 1.

The foregoing shortcomings of Satoh with respect to claim 1 are not in any way remedied by the teachings of Chapman. Chapman teaches a method of suppressing the headers of packets transmitted from a cable modem to a cable modem termination system (CMTS) in a DOCSIS network. The only references made to header compression (which are cited by the Examiner), discuss why header suppression is a better technique than header compression. In any case, Chapman nowhere teaches or suggests compressing data based on a data compression dictionary, let alone building such a dictionary based on a plurality of frequently occurring data strings identified in transmissions originating from a plurality of cable modems in the DOCSIS network or transmitting the dictionary to the plurality of cable modems as recited in claim 1.

As a result, the combination of Satoh, which teaches dictionary-based compression in which the dictionary is built based solely on a single data source (i.e., the data to be stored or transmitted by a first computer to a second computer), and Chapman, which merely teaches that packets with suppressed headers can be transmitted from a cable modem to a CMTS over a DOCSIS network, does not result in the invention of claim 1, which identifies a plurality of frequently occurring data strings in transmissions originating from a plurality of cable modems in a DOCSIS network, builds a data compression dictionary therefrom that is "tuned" for the DOCSIS network, and distributes the data compression dictionary to the plurality of cable modems.

Since Satoh and Chapman, either alone or in combination, do not teach or suggest each and every feature of independent claim 1, these references do not render claim 1 obvious. Claim 10 is also not rendered obvious by these references for the same reason as claim 1 from which it depends and further in view of its own features. Accordingly,

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Applicants respectfully request that the rejection of claims 1 and 10 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 3 recites a method for transmitting compressed data packets in a DOCSIS network. The method includes the steps of:

i. receiving a plurality of data packets for transmission, wherein each of said data packets has a payload portion comprised of one or more data strings;

ii. identifying which of said data packets has a payload portion that can be compressed;

iii. for each of said data packets identified in said step (b), replacing each of said one or more data strings contained in said payload portion with a token from said data compression dictionary assigned to represent said one or more data strings, wherein said data compression dictionary is tuned to data transmitted by a plurality of cable modems on the DOCSIS network;

iv. appending a compression indicator to each of said tokens within each of said data packets; and

v. transmitting said data packets within a DOCSIS service identifier.

Among other features, independent claim 3 includes the feature of performing data compression using a data compression dictionary that "is tuned to data transmitted by a plurality of cable modems on the DOCSIS network." For reasons set forth above in discussing claim 1, the combination of Satoh and Chapman does not teach or suggest such a data compression dictionary. Accordingly, these references do not render claim 3 obvious. Accordingly, Applicants respectfully request that the rejection of claim 3 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 7 recites a method for expanding a PDU data string transmitted over a DOCSIS network. The method includes the steps of:

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    i. receiving a plurality of data packets transmitted within a DOCSIS service identifier, wherein each of said data packets has a payload portion;

    ii. identifying each of said plurality of data packets having a compression indicator appended to one or more tokens within said payload portion; and

    iii. for each of said data packets identified in said step (b), replacing each of said one or more tokens contained within said payload portion with a data string assigned to represent said one or more tokens found in a data compression dictionary, wherein said data compression dictionary is tuned to data transmitted by a plurality of cable modems on the DOCSIS network.

Among other features, independent claim 7 includes the feature of performing data decompression using a data compression dictionary that "is tuned to data transmitted by a plurality of cable modems on the DOCSIS network." For reasons set forth above in discussing claim 1, the combination of Satoh and Chapman does not teach or suggest such a data compression dictionary. Accordingly, these references do not render claim 7 obvious. Accordingly, Applicants respectfully request that the rejection of claim 7 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claim 2

The Examiner has rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Satoh and Chapman in view of U.S. Patent No. 5,293,379 to Carr ("Carr"). Carr is directed to a packet-based data compression method that is used for transmitting packets between two local area networks. The method taught in Carr reorders information in a data packet into regions and then applies a string compression algorithm such as LZW to selected regions of the packet header and to a user data portion of the packet.

Carr does not in any way rectify the shortcomings of Satoh and Chapman with respect to independent claim 1. Consequently, the combination of Satoh, Chapman and

Carr does not render claim 2 obvious for the same reasons as independent claim 1 from which it depends and further in view of its own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claims 4, 5, 8 and 9

The Examiner has rejected claims 4, 5, 8 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Satoh, Chapman, and Carr in view of U.S. Patent No. 5,737,733 to Eller ("Eller"). Eller is directed to a method and system for searching a compressed document while a plurality of character strings stored in the compressed document are stored in a compressed code.

Carr and Eller do not in any way rectify the shortcomings of Satoh and Chapman with respect to independent claim 3. Consequently, the combination of Satoh, Chapman, Carr and Eller does not render claims 4 and 5 obvious for the same reasons as independent claim 3 from which they depend and further in view of their own respective features. Likewise, Carr and Eller do not in any way rectify the shortcomings of Satoh and Chapman with respect to independent claim 7. Consequently, the combination of Satoh, Chapman, Carr and Eller does not render claims 8 and 9 obvious for the same reasons as independent claim 7 from which they depend and further in view of their own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claims 4, 5, 8 and 9 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claim 6

The Examiner has rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Satoh and Chapman in view of U.S. Patent No. 5,530,645 to Chu ("Chu"). Chu is directed to a data compression process for use with a computer system that uses a composite dictionary, wherein the composite dictionary includes a fixed dictionary and an adaptive dictionary.

Chu does not in any way rectify the shortcomings of Satoh and Chapman with respect to independent claim 3. Consequently, the combination of Satoh, Chapman and Chu does not render claim 6 obvious for the same reasons as independent claim 3 from which it depends and further in view of its own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claim 6 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claim 11

The Examiner has rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Satoh and Chapman in view of U.S. Patent No. 6,078,955 to Konno *et al.* ("Konno"). Konno is directed to a method of controlling a computer system including a plurality of computers interconnected by a network.

Konno does not in any way rectify the shortcomings of Satoh and Chapman with respect to independent claim 1. Consequently, the combination of Satoh, Chapman and Konno does not render claim 11 obvious for the same reasons as independent claim 1 from which it depends and further in view of its own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claim 11 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.
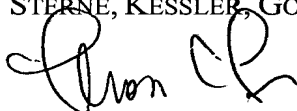
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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